

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-15 (canceled)

Claim 16 (new): A battery remaining capacity calculating method for calculating a remaining capacity as a capacity of electricity dischargeable by a secondary battery, said battery remaining capacity calculating method comprising:

measuring an output voltage value of said secondary battery;

dividing a use mode of said secondary battery into a high consumption mode in which the output voltage value is not lower than a threshold value and a low consumption mode in which the output voltage value is lower than the threshold value;

calculating a remaining capacity in said low consumption mode on a basis of a predetermined reference voltage curve as a discharge characteristic of said secondary battery and said output voltage value; and

calculating a remaining capacity in said high consumption mode supposing that there is minimal change in the remaining capacity at a time of change from said low consumption mode to said high consumption mode.

Claim 17 (new): The battery remaining capacity calculating method as claimed in claim 16, further comprising:

setting a reference remaining capacity as a remaining capacity before the use mode change and a start voltage as an output voltage at a time of a start of the high consumption mode,

wherein a remaining capacity is calculated on a basis of said reference remaining capacity, said start voltage, a predetermined cutoff voltage of said secondary battery, and said output voltage value.

Claim 18 (new): The battery remaining capacity calculating method as claimed in claim 17, wherein the remaining capacity Q_m in said high consumption mode is calculated by an

$$\text{equation } Q_m = Q_n - Q_n \frac{(V_n - V_m)}{(V_n - V_t)} = Q_n \left(\frac{V_m - V_t}{V_n - V_t} \right)$$

using the reference remaining capacity Q_n , the start voltage V_n , the cutoff voltage V_t , and the output voltage value V_m .

Claim 19 (new): The battery remaining capacity calculating method as claimed in claim 16, further comprising:

setting a voltage gap as an output voltage change at the time of the use mode change,
wherein a remaining capacity is calculated on a basis of said voltage gap and said output voltage value.

Claim 20 (new): The battery remaining capacity calculating method as claimed in claim 19, wherein an addition voltage value ($V_m + \Delta V$) is calculated by adding said voltage gap ΔV to said output voltage value V_m , and a remaining capacity at said addition voltage value ($V_m + \Delta V$) on said reference voltage curve is set as the remaining capacity Q_m in the high consumption mode.

Claim 21 (new): The battery remaining capacity calculating method as claimed in claim 16, wherein whether said secondary battery is in said low consumption mode or in said high consumption mode is determined by measuring an output current value of said secondary battery.

Claim 22 (new): The battery remaining capacity calculating method as claimed in claim 16, wherein whether said secondary battery is in said low consumption mode or in said high consumption mode is determined by detecting a change in output voltage of said secondary battery.

Claim 23 (new): The battery remaining capacity calculating method as claimed in claim 16, wherein whether said secondary battery is in said low consumption mode or in said high consumption mode is determined on a basis of information from an electronic device side to which said secondary battery supplies power.

Claim 24 (new): A battery remaining capacity calculating device for calculating a remaining capacity as a capacity of electricity dischargeable by a secondary battery, said battery remaining capacity calculating device comprising:

voltage measuring means for measuring an output voltage value of said secondary battery; and

arithmetic means for performing information processing, a reference voltage curve as a discharge characteristic of said secondary battery being recorded in said arithmetic means;

said arithmetic means divides a use mode of said secondary battery into a high consumption mode in which the output voltage value is not lower than a threshold value and a low consumption mode in which the output voltage value is lower than the threshold value,

said arithmetic means calculates a remaining capacity of said secondary battery in said low consumption mode on a basis of the voltage value measured by said voltage measuring means and said reference voltage curve, and

said arithmetic means calculates a remaining capacity in said high consumption mode on a basis of a reference remaining capacity as a remaining capacity before a use mode change, a start voltage as an output voltage at a time of a start of the high consumption mode, a predetermined cutoff voltage of said secondary battery, and said output voltage value.

Claim 25 (new): The battery remaining capacity calculating device as claimed in claim 24, wherein said arithmetic means calculates the remaining capacity Q_m in said high consumption mode by an equation

$$Q_m = Q_n - Q_n \frac{(V_n - V_m)}{(V_n - V_t)} = Q_n \left(\frac{V_m - V_t}{V_n - V_t} \right)$$

using the reference remaining capacity Q_n , the start voltage V_n , the cutoff voltage V_t , and the output voltage value V_m .

Claim 26 (new): A battery remaining capacity calculating device for calculating a remaining capacity as a capacity of electricity dischargeable by a secondary battery, said battery remaining capacity calculating device comprising:

voltage measuring means for measuring an output voltage value of said secondary battery; and

arithmetic means for performing information processing, a reference voltage curve as a discharge characteristic of said secondary battery being recorded in said arithmetic means;

wherein said arithmetic means divides a use mode of said secondary battery into a high consumption mode in which the output voltage value is not lower than a threshold value and a low consumption mode in which the output voltage value is lower than the threshold value,

said arithmetic means calculates a remaining capacity of said secondary battery in said low consumption mode on a basis of the voltage value measured by said voltage measuring means and said reference voltage curve, and

said arithmetic means calculates a remaining capacity in said high consumption mode on a basis of a voltage gap as an output voltage change at a time of a use mode change and said output voltage value.

Claim 27 (new): The battery remaining capacity calculating device as claimed in claim 26, wherein in said high consumption mode, the remaining capacity is calculated on a basis of said reference voltage curve and an addition voltage value ($V_m + \Delta V$) obtained by adding said voltage gap ΔV to said output voltage value V_m .

Claim 28 (new): A battery remaining capacity calculating program for calculating a remaining capacity as a capacity of electricity dischargeable by a secondary battery, said battery remaining capacity calculating program comprising making a processor perform:

a voltage measuring step of measuring an output voltage value of said secondary battery;

a mode determining step of dividing a use mode of said secondary battery into a high consumption mode in which the output voltage value is not lower than a threshold value and a low consumption mode in which the output voltage value is lower than the threshold value;

a low consumption time remaining capacity calculating step of calculating a remaining capacity in said low consumption mode on a basis of a predetermined reference voltage curve as a discharge characteristic of said secondary battery and said output voltage value; and

a high consumption time remaining capacity calculating step of calculating a remaining capacity in said high consumption mode supposing that there is little change in the remaining capacity at a time of change from said low consumption mode to said high consumption mode.

Claim 29 (new): The battery remaining capacity calculating program as claimed in claim 28, wherein in said high consumption time remaining capacity calculating step, the remaining capacity is calculated on a basis of a reference remaining capacity as a remaining capacity before the use mode change, a start voltage as an output voltage at a time of a start of the high consumption mode, a predetermined cutoff voltage of said secondary battery, and said output voltage value.

Claim 30 (new): The battery remaining capacity calculating program as claimed in claim 13, wherein in said high consumption time remaining capacity calculating step, the remaining capacity is calculated on a basis of a voltage gap as an output voltage change at the time of the use mode change and said output voltage value